

Remarks:

The Subject Application presently includes claims 32, 33, 35-41, 44-47, and 61-63, as last amended in the October 15, 2007, response filed in the Subject Application. The pending claims include independent claim 32. Each of claims 33, 35-41, 44-47, and 61-63 directly or ultimately depend from claim 32. In the Office Action, the Examiner rejects each of the pending claims. Applicants respectfully traverse the rejections and request allowance of all pending claims.

Applicants address each basis for rejection in the sections below.

1. Claim Rejections – 35 U.S.C. § 112

The Examiner rejects each of claims 32, 33, 35-41, 44-47, and 61-63 under 35 U.S.C. § 112, second paragraph, “as being incomplete for omitting essential steps, such omission amounting to a gap between the steps.” More specifically, the Examiner asserts that the claims must recite “specific steps detailing how the particular sections and components of the antirotation stop are formed.”

The Examiner cites to MPEP § 2172.01, entitled “Unclaimed Essential Matter”, which states:

A claim which omits matter disclosed to be essential to the invention as described in the specification or in other statements of record may be rejected under 35 U.S.C. 112, first paragraph, as not enabling. *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). See also MPEP § 2164.08(c). Such essential matter may include missing elements, steps or necessary structural cooperative relationships of elements described by the applicant(s) as necessary to practice the invention.

(Emphasis added.) Applicants fail to see what relevance this MPEP section has to the pending claims. Applicants have not, in either the specification or during prosecution, described any particular additional steps as being essential or necessary to practice the invention recited in claim 32. Rather, as-published paragraph 0026 of the “Summary of the Invention” section of the Subject Application describes a method of forming an insert pocket and an antirotation stop disposed in the insert pocket on a tool holder as follows:

[0026] The cutting insert may be manufactured using a tangential machining method. The method includes tangentially machining at least one antirotation stop and an insert pocket in the tool holder, wherein the antirotation stop comprises at least two substantially planar surfaces. The method may further comprise milling a top surface of the pocket with a ball mill. The tangential method allows forming more pockets per a diameter of the tool holder than an axial machining method.

(Emphasis added.) Also, as-published paragraphs 0045-0049 of the "Description of Embodiments of the Invention" section of the Subject Application includes the following description of an embodiment of a method of forming an insert pocket and an antirotation stop disposed in the insert pocket on a tool holder:

[0045] Because of the substantially planar geometry, this invention allows manufacturing of the pocket using the tangential method rather than the axial, or conventional, method. In the tangential method, the cutting tool approaches the pocket in a direction tangent, or parallel, to the pocket bottom face rather than in an axial direction perpendicular to the pocket bottom face as shall be in U.S. Pat. No. 6,238,133. Therefore, the design in this invention provides more options for ease of manufacturing .

[0046] It is a well-known that the conventional method, i.e. axial method, is typically used for manufacturing a pocket in a milling cutting tool. The tool used for manufacturing the pocket approaches and machines the pocket in a direction parallel to the axis of the pocket, thus the clearance space for the cutting tool must be provided along the pocket axis. In this sense, the axial method for manufacturing the pocket limits the number of pockets, or number of teeth, per diameter available for a milling cutter.

[0047] The tangential method for manufacturing the pocket is more flexible and one embodiment is shown in FIGS. 6A and 6B. As shown in FIG. 6A, a standard 90-degree end-mill 61 may approach the pocket in a direction parallel to the pocket bottom surface, or in other words, in a tangential direction to the pocket bottom face 64. In the embodiment shown in FIGS. 6A and 6B, a 90-degree end-mill opens the pocket 60 first, which machines the pocket side wall 69 for a rough cut, and at the same time machines the two substantially planar surfaces 62 and, optionally, a third substantially planar face 63. As shown in FIG. 6B, a standard ball mill 65 may machine, also tangentially, the upper portion 66 of the pocket side wall 69 which naturally forms a concave profile and an edge 67 at the intersection with the three substantially planar surfaces, 62 and 63.

[0048] The tangential manufacturing method allows more pockets or cutting teeth to be formed per diameter in a cutter body than an axial manufacturing method. Therefore, this invention can expand the machining applications.

[0049] There are several advantages in having the ability to produce tool holders with additional pockets. For instance, the life of the cutting inserts may be improved by reducing feed rates during machining while keeping or improving the material removal rate. A milling cutter with less distance between the teeth can also improve the life of cutter body by reducing the stresses distributed on each tooth. More teeth will also benefit in machining of some difficult-to-machine materials, like inconel, titanium, etc.

The above descriptions of a method of forming an insert pocket and an antirotation stop disposed in the insert pocket on a tool holder do not refer to any elements, steps, or structural cooperative relationships of elements as being essential or necessary that are not recited in the pending claims. In particular, the above description explains that “[i]n the embodiment shown in FIGS. 6A and 6B, a 90-degree end-mill opens the pocket 60 first, which machines the pocket side wall 69 for a rough cut, and at the same time machines the two substantially planar surfaces 62 and, optionally, a third substantially planar face 63.”

In the present response, Applicants amend the claims to better describe the claimed invention. New independent claim 64 recites a method wherein tangential milling forms an insert pocket including a bottom face and a side wall, and an antirotation stop comprising at least two substantially planar surfaces on a tool holder. Claim 64 further recites that tangential milling comprises “advancing a milling cutter into the tool holder in a direction substantially parallel to the bottom face.” The above passages from the Subject Application do not refer to or treat any aspect of described embodiments of the invention as being essential or necessary that is not recited in claim 64. As such, claim 64 clearly does not omit steps considered essential in the specification or in other statements in the record.

Applicants respectfully request that the Examiner withdraw the rejection under 35 U.S.C. § 112, ¶ 2.

2. Claim Rejections – 35 U.S.C. § 102

The Examiner rejects claims 32, 33, 35-41, 44-47, and 61-63 under § 102(b) as being anticipated by U.S. Patent No. 6,234,724 to Satran et al. ("Satran '724"). The Examiner asserts, *inter alia*, that Satran discloses a cutting tool holder including at least one insert pocket (52 in Satran '724) and at least one antirotation stop corresponding to the insert pocket, wherein the antirotation stop comprises three substantially planar surfaces (66, 68, 70) that are substantially perpendicular to the bottom surface and is integral to a bottom surface (54) and a side surface of the insert pocket. The Examiner further asserts that the insert pocket of Satran '724 includes a side wall for engaging an insert, and that the antirotation stop of Satran '724 indexes a cutting insert. The Examiner concludes that Satran '724 "inherently discloses the method."

In the present response, claims 32 and 39 have been canceled, and new independent claim 64 is presented. On entry of the amendments herein, the single independent claim pending before the Examiner is claim 64, which recites:

64. A method of forming an insert pocket and an antirotation stop disposed in the insert pocket on a tool holder, the method comprising:
- tangentially milling the tool holder to form the insert pocket and the antirotation stop, the insert pocket comprising a bottom face and a side wall, and the antirotation stop protruding from the side wall and comprising at least two substantially planar surfaces;
 - wherein tangentially milling the tool holder to form the insert pocket and the antirotation stop comprises advancing a milling cutter into the tool holder in a direction substantially parallel to the bottom face.

All other claims pending in the Subject Application depend directly or ultimately from claim 64. If independent claim 64 is directed to patentable subject matter, it follows that all claims pending in the Subject Application on entry of the amendments herein will be in condition for allowance.

Applicants respectfully submit that the method recited in claim 64 is not identically disclosed in Satran '724, and also would not have been obvious in view of Satran '724 taken alone or in view of any other prior art of record. For a reference to anticipate a claim under § 102(b) it must expressly or inherently disclose each and every element and limitation recited in the claim. See MPEP § 2131. Satran '724 cannot anticipate claim 64 for at least the reason that Satran '724 does not disclose each and every element recited in claim 64. Claim 64 is directed to a method that includes, *inter alia*, tangentially milling a tool holder to provide an insert pocket and an antirotation stop in the insert pocket, wherein the insert pocket includes a bottom face and a side wall, and the antirotation stop protrudes from the side wall and includes two substantially planar surfaces. Satran '724 at least does not disclose or suggest the use of tangential milling.

The Examiner asserts, without providing any explanation or other rationale, that Satran "inherently discloses the method". The Examiner is required to set forth in an Office Action some reasonable basis for an assertion of inherency. MPEP § 2112(IV) states the following regarding the use of inherency to reject claims:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. [citations omitted] "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" [citations omitted] ...

(Emphases added.) MPEP § 2112(IV) also states that:

In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.

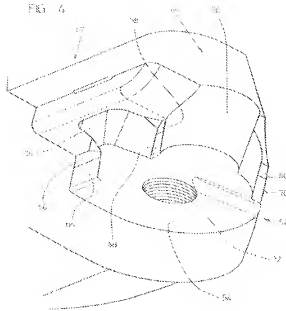
(Emphasis added.)

Satran '724 does not teach that the tool holder illustrated and described in that reference was machined or otherwise made by a method involving tangential milling. The Examiner has not provided any rationale in the Office Action for his assertion that such a teaching is inherent in Satran '724. Instead, the Examiner apparently merely concludes that it is possible that the tool holder illustrated in Satran '724 was or could be made by a method involving tangential milling. It follows from the above excerpt from the MPEP, however, that the mere possibility that tangential milling was or could have been used is not a sufficient basis for an anticipation rejection based on inherency. Therefore, the Examiner has not properly supported his assertion that the method recited in claim 32 is inherently anticipated by Satran '724.

Given the wording of new claim 64 relative to canceled claim 32, it follows that the Office Action also would not establish a *prima facie* rejection of new claim 64 over Satran '724 given that the Office Action does not include any basis in fact or any technical reasoning to satisfy the Examiner's threshold burden for establishing an anticipation rejection based on inherency.

Even if the Examiner were to present evidence or argument sufficient to establish a *prima facie* case that Satran '724 inherently discloses the method recited in new claim 64, such a rejection could not be maintained because the insert pockets illustrated in the figures of Satran '724 could not have been made by a process including tangential milling. More specifically, several of the curved and recessed lateral surfaces of the insert pockets of Satran '724 could only be formed by an end milling tool that is advanced into the workpiece in an axial direction, *i.e.*, generally along an axis perpendicular to the plane of the bottom surface of the insert pocket. This type of milling is commonly known as "axial" milling or "conventional" milling. In contrast, in tangential milling operation, which is recited in claim 64, the milling cutter advances into the workpiece in a direction substantially parallel or tangent to the insert pocket's bottom surface.

As confirmed by the attached Declaration of X. Daniel Fang ("the Fang Declaration"), an inventor named on the Subject Application and one having substantial skill in the manufacture of tool holders, it is not possible to machine the insert pocket (52) depicted in Figures 3-5 of Satran '724 by tangential milling, whether using, for example, an end milling tool with a ballnose or an end milling tool having a straight edge without a nose. Satran '724's Figure 4 is reproduced below. Insert pocket (52) includes several curved and recessed surfaces that extend in directions that are not substantially parallel to the bottom surface (54) of the insert pocket (52). Examples of these curved and recessed surfaces include the un-numbered curved and recessed lateral surfaces of the relief hollows (74) and (76), and the un-numbered curved and recessed lateral surface between the lateral hollow relief (76) and lateral surfaces (60, 70). Each of these curved and recessed lateral surfaces extends in a direction that is not substantially parallel to the bottom surface (54) of the insert pocket (52). Instead, these particular un-numbered curved and recessed surfaces of the insert pocket (52) extend in a direction that is normal to the bottom surface (54) of the insert pocket (52). These particular un-numbered curved and recessed lateral surfaces would have to be shaped using an axial milling technique in which a milling tool advances along an axis that is generally perpendicular to the insert pocket's bottom surface (54). As discussed at length during the prosecution of the Subject Application, axial milling fundamentally differs from tangential milling, wherein the milling tool advances into the workpiece and machines the insert pocket in a direction that is substantially parallel to a bottom surface of the insert pocket.



As further noted in the attached Fang Declaration, the above conclusions are confirmed by Figure 5 of Satran '724, which clearly shows the contour of a section through the two lateral relief hollows (74) and (76) taken substantially parallel to bottom surface (54). The hollows (74) and (76) each comprise several curved surfaces that are perpendicular to the bottom face (54) and are recessed into the walls (56, 58) and (60). Also, an additional small curved surface is shown in Figure 5 recessed into wall (60), adjacent to the curved and recessed surface of lateral relief hollow (76). These recessed surfaces have shapes that could not have been formed using tangential milling. Similarly, as explained in the Fang Declaration, the insert pockets shown in Figures 10-13, 15, and 16 of Satran '724 include surfaces that could not have been formed by tangential milling.

In short, the insert pocket shown and described in Satran '724 could not have been formed by tangential milling. Even if the Examiner were to satisfy the threshold burden to reject claim 64 under § 102(b) based on inherency, that rejection could not stand given that the insert pockets shown in Figures 3-5, 10-13, 15, and 16 of Satran '724 includes surfaces that could not have been formed by tangential milling. It therefore follows that Satran '724 does not anticipate, by inherency or otherwise, the method recited in new claim 64. Furthermore, Satran '724 does not suggest and would not have motivated one to practice the method recited in new claim 64.

All other claims pending in the Subject Application on entry of the amendments presented herein depend directly or ultimately from new claim 64. The allowance of those dependent claims follows directly from the fact that the subject matter of claim 64 is allowable.

Conclusion:

Applicants assert that the claims of the Subject Application, as amended herein, are directed to subject matter that is patentable over the cited references. As such, Applicants respectfully request that the Examiner enter the amendments submitted herein and issue a Notice of Allowance at an early date.

Applicants' present response should not in any way be taken as acquiescence to any of the specific assertions, statements, etc., presented in the Office Action not explicitly addressed herein. Applicants reserve the right to specifically address all such assertions and statements in subsequent responses.

If the Examiner is of the opinion that the Subject Application is in condition for disposition other than allowance, Applicants respectfully request that the Examiner contact Applicants' attorney at the telephone number listed below so that those concerns may be addressed.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "K&L Gates", is written over a light gray rectangular background.

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